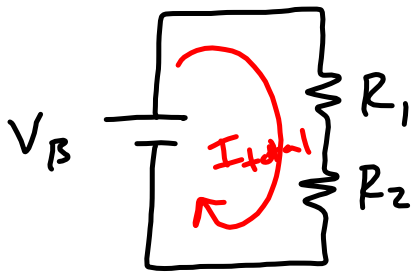
A 24 V battery and two resistors are connected in series. One resistor is 18 ohms and the other is 6 ohms. Calculate the equivalent resistance, total current, voltage drop across each resistor, and power consumed by each resistor.



$V_B = 24\,V$ $V_1 = 18\,V$ $V_2 = 6\,V$

$R_1 = 18\,\Omega$ $R_2 = 6\,\Omega$

$R_{eq} = 24\,\Omega$

$I_1 = 1\,A$ $I_2 = 1\,A$

$I_{total} = 1\,A$

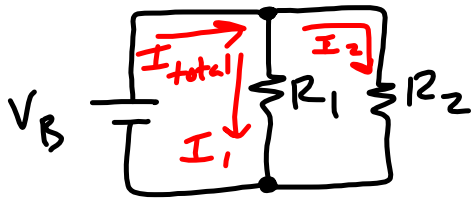
$$I_{total} = \frac{V_B}{R_{eq}} = \frac{24\,V}{24\,\Omega} = 1\,A$$

$V_1 = I_{total} R_1$
$= (1\,A)(18\,\Omega)$
$= 18\,V$

$P_1 = I_{total} V_1 = (1\,A)(18\,V) = 18\,W$

$P_2 = I_{total} V_2 = (1\,A)(6\,V) = 6\,W$

A 24 V battery and two resistors are connected in parallel. One resistor is 18 ohms and the other is 6 ohms. Calculate the equivalent resistance, total current, voltage drop across each resistor, current through each resistor and power consumed by each resistor.



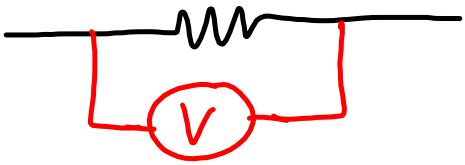
$V_B = 24\,V$ $V_1 = 24\,V$ $V_2 = 24\,V$

$I_{total} = 5.33\,A$ $I_1 = 1.33\,A$ $I_2 = 4\,A$

$R_{eq} = 4.5\,\Omega$ $R_1 = 18\,\Omega$ $R_2 = 6\,\Omega$

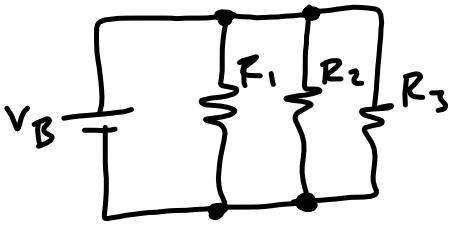
$P_{total} = 128\,W$ $P_1 = 32\,W$ $P_2 = 96\,W$

Connecting a voltmeter



Connecting an ammeter

A 24 V battery is connected to three resistors, all in parallel with the battery. The resistors have values of 10 ohms, 15 ohms, and 20 ohms. Determine the total current, equivalent resistance, and voltage, current, and power for each resistor.



$V_B = 24V$	$V_1 = 24V$	$V_2 = 24V$	$V_3 = 24V$
$R_{eq} = 4.6\Omega$	$R_1 = 10\Omega$	$R_2 = 15\Omega$	$R_3 = 20\Omega$
$I_{total} = 5.2A$	$I_1 = 2.4A$	$I_2 = 1.6A$	$I_3 = 1.2A$
$P_{total} = 124.8W$	$P_1 = 57.6W$	$P_2 = 38.4W$	$P_3 = 28.8W$